INDUCTOR FOR SEMICONDUCTOR DEVICE AND METHOD OF MAKING SAME

ABSTRACT OF THE DISCLOSURE

An inductor for a semiconductor device is formed within a groove in an insulating layer on a semiconductor substrate. A number of lower conductive lines are formed across the groove. A cylindrical insulator is formed over the lower conductive lines and aligned with the groove. Upper conductive lines are formed over the cylindrical insulator. The upper and lower conductive lines are slanted lengthwise along the groove in opposite directions to form a spiral coil having a circular cross-section, thereby preventing abrupt changes in the magnetic field. The ends of upper conductive lines contact the ends of the lower conductive lines so that the thickness of the coil is controlled by the thickness of the cylindrical insulator, thereby allowing the self-inductance to be increased and the positional density of the conductive lines to be freely controlled.